Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I Degree Examination - 07-Apr-2025

Time: Three Hours **Max. Marks: 100**

Marks

ANATOMY – PAPER - I (RS3)
Q.P. CODE: 1075

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary.

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the sulci and gyri on superolateral surface of brain. Add a note on the functional areas on the superolateral surface of brain.

2. Describe the mammary gland and add a note on its applied anatomy.

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Right atrium of heart
4. Microscopic structure of large artery
5. Blood supply of scalp.
6. Notochord.
7. Sub-occipital triangle
8. Posterior mediastinum
9. Intrinsic muscles of larynx
10. Intermuscular spaces around scapula
11. Flexor retinaculum of hand
12. Ansa cervicalis

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Fertilization
14. Features in the interior of nasopharynx.
15. Erb’s paralysis
16. Major openings of diaphragm
17. Wrist drop.
18. External jugular vein
19. Blood supply of thyroid gland
20. Draw a neat labelled diagram of histology of serous salivary gland
21. Pericardial sinuses.
22. Coracoid process of scapula

Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I Degree Examination – 09-Apr-2025

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - II (RS-3)
Q.P. CODE: 1076

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the articulating surfaces, relations and movements of hip joint. Add a note on its applied anatomy

2. Describe the parts, relations, blood supply and development of Pancreas

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Popliteal fossa
4. Microscopic structure of Kidney
5. Lesser sac
6. Sex chromosomes
7. Second part of duodenum
8. Inferior vena cava
9. Extra hepatic Biliary apparatus
10. Development of uterus
11. Ischiorectal fossa
12. Fallopian tube

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Pouch of Douglas
14. Dorsalis pedis artery
15. Blood supply of suprarenal gland
16. Down’s syndrome
17. Histology of vas deferens
18. Bare area of liver
19. Inguinal ligament
20. Microscopic structure of appendix
21. Derivatives of Mesonephric duct
22. Deep peroneal nerve

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I Degree Examination - 11-Apr-2025

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY – I (RS3)
Q.P. CODE: 1077

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the composition, functions and regulation of gastric juice secretion.
2. Define cardiac cycle. Describe the mechanical events of cardiac cycle.

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Cardiovascular changes during muscular exercise
4. Describe the phases of deglutition.
5. Rh incompatibility
6. Classify Hypoxia. Explain any two of them.
7. Describe the conducting system of the heart.
8. Micturition reflex
9. Immunoglobulins
10. Artificial respiration
11. Intercellular communication
12. Intrinsic mechanism of blood coagulation

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Three special features of coronary circulation
14. Herring - Breuer reflexes
15. Non excretory functions of kidneys
16. Define GFR and give its normal value and name factors affecting it.
17. Name two anticoagulants. Give their mechanism of action.
18. Define Tidal volume and residual volume. Give their normal values.
19. List the functions of bile.
20. Laboratory classification of Anaemia
21. Cyanosis
22. Define transport maximum for glucose. Give its normal value.

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I Degree Examination - 15-Apr-2025

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY – II (RS3)
Q.P. CODE: 1078

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the origin, course, termination and function of corticospinal tract. List two signs **of** hemiplegia and basis for it.

2. What is normal serum calcium level? Describe the hormonal regulation of serum calcium level. What are the clinical features of tetany?

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Excitation contraction coupling in skeletal muscle fiber
4. Cushing's Syndrome
5. Referred pain.
6. List the functions of prefrontal lobe
7. Organ of corti
8. Explain three properties of synapse.
9. Explain the refractive errors and their corrections
10. Wallerian degeneration
11. Describe the phases of menstrual cycle.
12. Functions of estrogen.

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Describe the nerve action potential.
14. Mention any three functions of thyroxine.
15. What is saltatory conduction? What is its importance?
16. Write any three functions of testosterone.
17. What are Somatomedins? What are **its** actions?
18. Functions of skin
19. List six features of cerebellar disease.
20. Primary taste sensations.
21. Accommodation reflex
22. What is impedance matching?

Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I Degree Examination - 17-Apr-2025

Time: Three Hours **Max. Marks: 50 Marks**

BIOCHEMISTRY – PAPER I (RS3)
Q.P. CODE: 1079

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note: Both QP Codes 1079 and 1080 are to be, answered within total duration of three hours)
(Use separate Answer books for QP Code 1079 & 1080)

LONG ESSAYS **1 x 10 = 10 Marks**

1. Define Glycogenesis and Glycogenolysis. Write the reactions of Glycogenesis and Glycogenolysis in the Liver.

SHORT ESSAYS **5 x 5 = 25 Marks**

2. Formation and utilization of ketone bodies
3. What are Isoenzymes? Briefly explain Isoenzymes with examples.
4. Describe the secondary structures of Proteins with examples.
5. How is Urea synthesized in the body?
6. What is Oxidative Phosphorylation? Explain Chemiosmotic theory.

SHORT ANSWERS **5 x 3 = 15 Marks**

7. Active transport.
8. **Write any three tumour markers along with its diagnostic significance.**
9. **What are free radicals? Name any four antioxidants in the body.**
10. Lactose intolerance.
11. Essential fatty acids.

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Rajiv Gandhi University of Health Sciences, Karnataka

First Phase MBBS Degree Examination – 17-Apr-2025

Time: Three Hours **Max. Marks: 50 Marks**

BIOCHEMISTRY – PAPER II (RS3)
QP Code: 1080

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.
(Note: Both QP Codes 1079 and 1080 are to be, answered within total duration of three hours)
(Use separate Answer books for QP Code 1079 & 1080)

LONG ESSAYS **1 x 10 = 10 Marks**

1. Describe the source, RDA, biochemical functions, synthesis and deficiency manifestation of Vitamin D.

SHORT ESSAYS **5 x 5 = 25 Marks**

2. Name the plasma buffers and role of buffers in maintaining the acid base balance.
3. Formation and fate of bilirubin.
4. Define Basal Metabolic Rate. Explain the factors affecting BMR.
5. **What is clearance test? Which is the ideal substance used for determination of Glomerular Filtration Rate and why? Explain.**
6. Dietary fibre.

SHORT ANSWERS **5 x 3 = 15 Marks**

7. Applications of Polymerase chain reaction.
8. Name four synthetic analogues of nucleotides. Mention their therapeutic importance.
9. Name the inhibitors of replication and their clinical importance.
10. Name the selenium containing enzyme. What is its clinical importance?
11. What you mean by abnormal hemoglobins. Explain briefly. Give examples.

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination – 24th Sep 2025

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - I (RS-4, RS-5 & RS-6)
Q.P. CODE: 1020
(QP Contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 55 year old lady comes to the hospital with history of swelling in the right upper quadrant of the breast. On examination there is a nodular lump with retraction of the nipple, the examination of the axilla revealed enlargement of axillary lymph nodes.
    a) Describe the anatomical basis for retraction of nipple
    b) Describe the mammary gland under the following headings.
        i. Location and extent
        ii. Parenchyma of the mammary gland
        iii. Blood supply and nerve supply
        iv. Lymphatic drainage
2. Describe the Temporomandibular joint under the following headings:
    a) Bones articulating
    b) Ligaments attached
    c) Relations
    d) Movements and muscles involved
    e) Blood supply and nerve supply

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Describe the attachments of extensor retinaculum of hand and the compartments deep to it.
4. **A 35 year male walks into the clinic with history of chest discomfort and difficulty in breathing. X-ray report shows haziness and opacity in the lower third of right pleura cavity. Mention the parts of parietal pleura. Describe the pleural recesses and pulmonary ligament.**
5. Describe the external and internal features of right ventricle
6. Describe the formation, contents and structures piercing carotid sheath
7. Describe the formation of circle of willis. Name the branches and areas supplied by them
8. Describe the derivatives of the three germ layers.
9. Describe the microscopic structure of Thymus
10. Describe the cross section of midbrain at the level of Inferior colliculus

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Enumerate the branches of Radial artery
12. Draw a neat labelled diagram showing the structures at the hilum of right and left lung in sequence.
13. List the contents of posterior mediastinum
14. List the relations of cavernous sinus
15. List the Intrinsic muscles of larynx and their nerve supply
16. Write the secretomotor pathway of submandibular gland.
17. Mention the afferents and efferents of superior cerebellar peduncles.
18. List the types of epiphysis with examples
19. List the parts and blood supply of long bone.

20. Enumerate the structures forming the placental barrier

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) **How many ball and socket synovial joints are there in the upper limb?**
- **A. 1**
- **B. 2**
- **C. 3**
- **D. 4**

21 ii) Implantation is complete after _____ days after fertilization.
- A. 2 to 3 days
- B. 4 to 5 days
- C. 6 to 8 days
- D. 9 to 10 days

21 iii) Myelinated nerve fibres are formed by all components **EXCEPT**
- A. Axis cylinder
- B. Myelin sheath
- C. Neurilemmal sheath
- D. Epineurium

21 iv) All of the following are examples of end arteries **EXCEPT**
- A. Central branches of cerebral arteries
- B. Central artery of Retina
- C. Facial artery
- D. Splenic artery

21 v) The effects of parasympathetic system on lungs are all, **EXCEPT**
- A. Motor to bronchial muscle
- B. Secretomotor to mucus glands of bronchial tree
- C. Responsible for cough reflex
- D. Causes bronchodilation

22 i) Arachnoid villi drain into which of the following sinuses
- A. Transverse
- B. Straight
- C. Superior sagittal
- D. Sigmoid

22 ii) Lateral corticospinal tract terminates at
- A. Anterior horn of spinal cord
- B. Lateral horn of spinal cord
- C. Clark's column
- D. Substantia gelatinosa

22 iii) Which cartilage has **NO** perichondrium
- A. Hyaline
- B. Elastic
- C. White fibro
- D. All of the above

22 iv) The middle nasal concha is a part of which bone
- A. Ethmoid
- B. Sphenoid
- C. Palatine bone
- D. Vomer

22 v) Inferior vena cava enters right atrium at which level
- A. T8
- B. T10
- C. T11
- D. T12

Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I Degree Examination - 24/Sep/2025

Time: Three Hours **Max. Marks: 100 Marks**

ANATOMY – PAPER - I (RS3)
Q.P. CODE: 1075

Your answers should be specific to the questions asked.
Draw neat, labeled diagrams wherever necessary.

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the origin, course, branches, distribution and applied Anatomy of Ulnar Nerve.
2. Classify white matter of brain. Describe the internal capsule and add a note on its applied Anatomy.

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Right Coronary Artery.
4. Notochord.
5. Implantation.
6. Digastric Triangle of Neck.
7. Maxillary Air Sinus.
8. Tympanic Membrane.
9. Medial surface of Left Lung – diagram only.
10. Describe the Microscopic Structure of Thin Skin.
11. Draw a neat labeled diagram of floor of fourth ventricle.
12. Internal jugular vein.

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Median cubital vein.
14. Sternal angle.
15. Synovial joint.
16. Parts of a multipolar neuron – draw and label only.
17. Serratus anterior.
18. Draw the transverse section of Midbrain at the level of Inferior Colliculus.
19. Hilton’s Law.
20. Six derivatives of endoderm.
21. Spermatogenesis.
22. Draw and label microscopic structure of hyaline cartilage.

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MBBS Phase – I (CBME) Degree Examination - 24/Sep/2025

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER – I (RS-7)
Q.P. CODE: 5501
(QP Contains Four Pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAY **1 x 10 = 10 Marks**

1. Describe the Shoulder joint under the subheadings of
   a) Type of joint
   b) Articulating surfaces
   c) Ligaments
   d) Movements and muscles causing them
   e) Applied anatomy

REASONING QUESTIONS (Short Answer) **5 x 3 = 15 Marks**

2. Explain how stab injury to the left side of the neck can cause injury to thoracic duct
3. Why posterior cricoarytenoid muscle is called as safety muscle of larynx? Explain the nerve supply of the above muscle.
4. Explain the anatomical reason of injury to long thoracic nerve results in winging of scapula.
5. Explain Hilton's law
6. Explain the anatomical reason for naming the Charcot's artery as artery of cerebral haemorrhage. Brief the origin and area of distribution of the artery.

SHORT NOTES **4 x 5 = 20 Marks**

7. A patient had hoarseness of voice after thyroid surgery. Name the nerve involved and why? Explain the relations of thyroid gland.
8. Describe the origin, course branches and distribution of oculomotor nerve. Add a note on its applied aspects.
9. In an elderly male, coronary angiography reveals significant occlusion in the right coronary artery.
   a) Name the surfaces of the heart
   b) Describe its branches and the area supplied by it
10. **Seetha and Geetha look alike.**
    a) Mention the type of twinning occurred in them.
    b) What are the different types of twinning?
    c) **c) Add a note on hazards of twinning.**

SHORT NOTES **7 x 5 = 35 Marks**

11. Describe the pleural recesses and their importance.
12. Describe the parotid gland under following headings- external features, relations and contents within it
13. Compare and contrast the microscopy of sensory and sympathetic ganglion with neat labelled diagram.
14. Describe cavernous sinus under following location, relations, structures passing through it, communication and tributaries.

15. Describe the boundaries and contents of superior mediastinum

16. Describe the boundaries of tonsillar fossa and blood supply of palatine tonsil

17. What is the importance of cadavers in medical education?

MULTIPLE CHOICE QUESTIONS (All scenario based) 20 x 1 = 20 Marks

18 A 19-year-old student, presents to the outpatient clinic with a three-month history of persistent headaches, which worsens in the mornings. His mother also reports that he's been unusually forgetful lately. On examination, he is alert but slightly disoriented to date. It is diagnosed as Glioma, a non-neuronal tumour in the myelin sheath which are quite rare.

18 (i) Which of the following cell types in the central nervous system is primarily responsible for forming the myelin sheath around axons?

A. Astrocytes
B. Microglia
C. Oligodendrocytes
D. Ependymal cells

18 (ii) Following cells are neurons **EXCEPT**

A. Schwann cells
B. Basket cells
C. Stellate cells
D. Horizontal cells

19 A 25-year female has come to the OPD with missed periods. She wants to know if she is conceived.

19 (i) Pregnancy tests are based upon the detection in maternal urine of

A. Estrogen
B. Progesterone
C. Human chorionic Gonadotrophin
D. Human chorionic Corticotropin

19 (ii) Where does the process of sperm capacitation take place?

A. Testes
B. Ovum
C. Embryo
D. Female genital tract

20 A 25-year-old medical student accidentally hits the inner side of his elbow on the edge of a table. He experiences a sudden tingling sensation and numbness radiating down to the ring and little fingers, which lasts for a few minutes.

20 (i) Which nerve is most likely involved in this injury?

A. Radial nerve
B. Median nerve
C. Ulnar nerve
D. Musculocutaneous nerve

20 (ii) Which of the following clinical signs would most likely be observed if this nerve was chronically compressed at the elbow?

A. Loss of thumb opposition
B. Wrist drop
C. Clawing of the 4^{th} and 5^{th} digits
D. Clawing of the 3^{rd} & 4^{th} digits

21 A nurse gives intravenous injection in the cubital fossa of a patient

21 (i) Which of the following is the most preferred vein for the procedure?

A. Basilic vein
B. Cephalic vein
C. Median cubital vein
D. Axillary vein

21 (ii) Which of the following structure separates the above vein from underlying brachial artery.

A. Supinator muscle
B. Bicipital aponeurosis
C. Brachialis muscle
D. Pronator teres

22 In the Radiodiagnosis OPD, a patient was being prepared for Gastric endoscopy procedure.

22 (i) The number of normal constrictions in the oesophagus are

A. 2
B. 3
C. 4
D. 5

22 (ii) The anatomical structure causing 2nd oesophageal constriction is

A. Arch of aorta
B. Arch of azygos
C. Pulmonary trunk
D. Left principal bronchus

23 A boxer suffers a blow to the side of the head and develops extradural hematoma.

23 (i) Which of the following artery is most likely ruptured?

A. Vertebral artery
B. Superficial temporal artery
C. Middle meningeal artery
D. Accessory meningeal artery

23 (ii) The ruptured artery enters the skull through which of the following foramina.

A. Foramen ovale
B. Foramen spinosum
C. Foramen lacerum
D. Foramen rotundum

24 An individual experiencing symptoms like sneezing, running nose was diagnosed as Hay fever (Allergic Rhinitis)

24 (i) Which of the following is called ganglion of hay fever

A. Pterygopalatine ganglion
B. Otic ganglion
C. Ciliary ganglion
D. Submandibular ganglion

24 (ii) Infraorbital nerve is a continuation of

A. Mandibular nerve
B. Ophthalmic nerve
C. Maxillary nerve
D. Facial nerve

25 A degree student visited ENT OPD with complaints of pain during jaw movements and a clicking sound on opening and closing of the mouth. The consultant diagnosed his condition as a derangement of temporomandibular joint.

25 (i) The temporomandibular joint is a following type of synovial joint
- A. Hinge joint
- B. Bicondylar joint
- C. Saddle joint
- D. Ball & socket joint

25 (ii) The articular disc of the temporomandibular joint blends with the tendon of
- A. Medial pterygoid
- B. Lateral pterygoid
- C. Temporalis
- D. Masseter

26 Posterior cerebral artery occlusion leads to blindness.

26 (i) Which area of brain is crucial for processing visual information
- A. Frontal lobe
- B. Parietal lobe
- C. Occipital lobe
- D. Temporal lobe

26 (ii) Prefrontal cortex involved in high level cognitive functions like planning and decision making, is located in
- A. Frontal lobe
- B. Parietal lobe
- C. Occipital lobe
- D. Temporal lobe

27 A 28-year old male was brought to Emergency OPD with history of headache and pain in the neck for the past 2 days. The consultant after confirming neck rigidity, asked for a lumbar puncture to rule out meningitis.

27 (i) Lumbar puncture in an adult is done between the following vertebrae
- A. L1 & L2
- B. L2 & L3
- C. L3 & L4
- D. L4 & L5

27 (ii) Spinal dura mater extends upto the lower border of
- A. S2
- B. S3
- C. S4
- D. S5

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MBBS Phase – I (CBME) Degree Examination - 26/Sep/2025

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - II (RS-4, RS-5 & RS-6)
Q.P. CODE: 1021
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Write in detail about formation, course, relations, branches and applied anatomy of sciatic nerve.
2. A cirrhotic patient comes to the gastroenterology unit for liver transplantation. The surgical gastroenterologist plans to transplant the right lobe of liver.
   a) Mention the anatomical, physiological and vascular segments of both lobes of liver.
   b) Describe the borders, surfaces and relations of liver.
   c) Trace the extrahepatic biliary apparatus.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Describe the development of Kidney.
4. Describe the peritoneal relations, supports, blood supply and applied anatomy of rectum.
5. An 18 year old young adult came with history of fever, severe pain in the right lower abdomen and two bouts of vomiting. Clinical examination revealed tenderness at Mcburney's point.
   a) Mention the anatomical structure infected
   b) Describe its anatomical positions and blood supply.
6. Compare and contrast the microscopic features of the different zones of adrenal cortex with diagram.
7. Describe the boundaries and contents of superficial perineal pouch.
8. Describe the presenting parts, relations, and nerve supply of urinary bladder.
9. Describe the presenting parts, relations and ligaments of spleen.
10. Define Karyotyping. Describe the process briefly and group the chromosomes according to Denver's classification.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Mention the formation and termination of great saphenous vein.
12. Name the parts of pancreas developing from dorsal pancreatic bud. State the embryological basis of annular pancreas.
13. Mention the attachments, nerve supply and action of Sartorius.
14. Draw a neat labelled diagram showing the lymphatic drainage of stomach.
15. List the structures crossed by root of mesentery.
16. Enumerate the branches of anterior division of Internal iliac artery.
17. Mention the location and drainage of seminal vesicles.
18. Name any three branches of lumbar plexus.
19. Draw a neat labelled diagram of microscopic structure of ovary.
20. List any two differences between the microscopic structure of ureter and vas deferens.

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Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Unlocking muscle of the Knee joint is
- A. Vastus intermedius
- B. Vastus medialis
- C. Popliteus
- D. Rectus femoris

21 ii) Eversion occurs at which of the following joint
- A. Subtalar
- B. Tibio talar joint
- C. Inferior tibio fibular
- D. Ankle

21 iii) Dorsalis pedis artery is a continuation of
- A. Anterior tibial artery
- B. Posterior tibial artery
- C. Popliteal artery
- D. Lateral tarsal artery

21 iv) Portal vein drains all **EXCEPT**
- A. Superior mesentric vein
- B. Splenic vein
- C. Left renal vein
- D. Left gastric vein

21 v) Lesser curvature of stomach is related to
- A. Left gastric artery
- B. Cystic artery
- C. Splenic artery
- D. Gastroduodenal artery

22 i) Which of the following structures is a content of pudendal canal
- A. Inferior gluteal artery
- B. Inferior epigastric artery
- C. Internal pudendal artery
- D. Internal Iliac artery

22 ii) Angle of anteflexion of uterus
- A. 90^0 – 95^0
- B. 100-105^0
- C. 110-115^0
- D. 120-125^0

22 iii) Which of the following is a derivative of Midgut
- A. Oesophagus
- B. Stomach
- C. First part of duodenum
- D. Third part of duodenum

22 iv) Barr body is
- A. Inactive X chromosome
- B. Active X chromosome
- C. Active Y chromosome
- D. Inactive Y chromosome

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22 v) Special identification feature of duodenum in histology
   A. Peyer's patches
   B. Submucosal Brunner's glands
   C. Stratified squamous epithelium
   D. Taenia coli

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MBBS Phase – I (CBME) Degree Examination - 29/Sep/2025

Time: Three Hours **Max. Marks: 100**

PHYSIOLOGY – PAPER - I (RS-4, RS-5 & RS-6)
Q.P. CODE: 1022
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. List the neural centres of respiration and explain the neural regulation of breathing

2. Define circulatory shock. Mention the types of shock. Explain the various compensatory mechanisms in non progressive stage of shock

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Explain the factors regulating glomerular filtration rate (GFR)
4. Describe Intrinsic pathway of clotting mechanism
5. A 45 yr old business man who had irregular sleep and food pattern, complains of heart burns, frequent burping. A physician prescribed him proton pump inhibitors (PPIs), from which he got some relief from above symptoms.
   a) What condition was he suffering from?
   b) Explain the basis for treating him with PPIs.
   c) Explain the factors regulating gastric acid secretion.
6. Describe the special features of coronary circulation.
7. Describe the renal handling of glucose.
8. Describe the phases of deglutition.
9. Describe the various types of heart blocks.
10. Explain the hazards of blood transfusion.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Tabulate the differences between first and second heart sounds
12. Define Erythrocyte Sedimentation Rate (ESR). what is the clinical significance of ESR?
13. Describe the physiological significance of Ventilation perfusion ratio.
14. Describe cutaneous vascular Triple response.
15. What are Gap junctions? Give example of their functional significance.
16. What are functions of bile salts?

17. Define Dead space. What are its types?
18. Draw a neat labelled diagram of Cystometrogram
19. Explain Bhor's effect.
20. List the various blood indices. Write the formula and normal value of each.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Plasma protein responsible for clotting is
- A. Albumin
- B. Globulin
- C. Fibrinogen
- D. All of the above

21 ii) Type of ADH receptor present in kidney
- A. V_1
- B. V_2
- C. V_3
- D. V_{1B}

21 iii) Choleretic is
- A. Gastrin
- B. Secretin
- C. CCK- PZ
- D. Somatostatin

21 iv) Natural anticoagulant is
- A. Serotonin
- B. Histamine
- C. Heparin
- D. Calcium

21 v) Type of hypoxia where cyanosis does **NOT** occur
- A. Anemic hypoxia
- B. Hypoxic hypoxia
- C. Histotoxic hypoxia
- D. Stagnant hypoxia

22 i) Left shift of oxygen dissociation curve is due to
- A. Increased temperature
- B. Decreased p^H
- C. Increased 2,3 - DPG
- D. Myoglobin

22 ii) Indicator used to measure ECF is
- A. Inulin
- B. Antipyrine
- C. Deuterium oxide
- D. Tritium oxide

22 iii) Rh antibody is a type of
- A. Ig G
- B. Ig A
- C. Ig E
- D. Ig M

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22 iv) PR interval indicates which of the following?

A. AV node conduction time
B. Ventricular repolarisation
C. Atrial depolarisation
D. Both A and C

22 v) Acquired immunity involves

A. Defense by Neutrophils
B. Defense by phagocytic cells
C. Defense by inflammation
D. Defense by T lymphocytes

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MBBS Phase – I (CBME) Degree Examination - 03/Oct/2025

Time: Three Hours **Max. Marks: 100**

PHYSIOLOGY – PAPER - II (RS-4, RS-5 & RS-6)
Q.P. CODE: 1023
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Name the hormones secreted by anterior pituitary. Describe the actions of growth hormones. Add a note on gigantism
2. Define pain. Describe the pathway of pain. Add a note on endogenous pain analgesic system describe theories of referred pain with suitable examples

SHORT ESSAYS **8 x 5 = 40 Marks**

3. A 50-year-old female with breathlessness, nervousness, sleeplessness with a lump in the neck. Her resting heart rate is 100BPM. She experiences intolerance to heat.
   a) What is your probable diagnosis?
   b) Enumerate the steps in management
4. Describe Excitation contraction coupling
5. Explain the steps of spermatogenesis
6. Define receptor. Classify sensory receptors. Briefly describe the phenomenon of adaptation
7. Describe the lesions of visual pathway with a neat labelled diagram
8. Explain functions of middle ear
9. Describe the actions of aldosterone
10. Describe muscle spindle using a neat labelled diagram

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Explain saltatory conduction in a nerve
12. Functions of progesterone
13. Clinical features of cretinism
14. Draw a neat labelled diagram of taste pathway

15. Physiological basis of female oral contraceptives
16. Features of brain death
17. Draw a neat labelled diagram of reflex arc
18. Explain Weber's Fechner's law
19. List the tests for cerebellar ataxia
20. Functions of CSF

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) All the following are hormones of anterior pituitary gland **EXCEPT**
- A. Growth hormone
- B. Thyroid hormone
- C. Prolactin
- D. Oxytocin

21 ii) Most effective female contraceptive for birth spacing
- A. Tubectomy
- B. Vasectomy
- C. Intra uterine contraceptive device
- D. Condom

21 iii) Cushing's syndrome result from increased exposure of body to high blood level of
- A. Glucocorticoids
- B. Mineralocorticoids
- C. Catecholamines
- D. Sex steroids

21 iv) Somatosensory cortex is present in
- A. Frontal lobe
- B. Temporal lobe
- C. Parietal lobe
- D. Occipital lobe

21 v) Resting tremors are characteristic feature of
- A. Parkinsonism
- B. Motor neuron disease
- C. Hepatic encephalopathy
- D. Hypoxic encephalopathy

22 i) Condition where bone density increases due to defective bone resorption
- A. Rickets
- B. Adult rickets
- C. Osteopetrosis
- D. Osteogenesis imperfecta

22 ii) All of the following hormones cause hyperglycemia **EXCEPT**
- A. Glucagon
- B. Epinephrine
- C. Cortisol
- D. Insulin

22 iii) Auditory receptor is present in
- A. Rods
- B. Cones
- C. Olfactory bulb
- D. The organ of corti

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22 iv) inhibitory neurotransmitter in nervous system
- A. Acetyl choline
- B. Gamma amino butyric acid
- C. Glutamate
- D. Dopamine

22 v) All of the following animals are poikilothermic **EXCEPT**
- A. Reptiles
- B. Humans
- C. Amphibian
- D. Fish

MBBS Phase – I (CBME) Degree Examination - 26/Sep/2025

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - II (RS-4, RS-5 & RS-6)
Q.P. CODE: 1021
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Write in detail about formation, course, relations, branches and applied anatomy of sciatic nerve.
2. A cirrhotic patient comes to the gastroenterology unit for liver transplantation. The surgical gastroenterologist plans to transplant the right lobe of liver.
   d) Mention the anatomical, physiological and vascular segments of both lobes of liver.
   e) Describe the borders, surfaces and relations of liver.
   f) Trace the extrahepatic biliary apparatus.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Describe the development of Kidney.
4. Describe the peritoneal relations, supports, blood supply and applied anatomy of rectum.
5. An 18 year old young adult came with history of fever, severe pain in the right lower abdomen and two bouts of vomiting. Clinical examination revealed tenderness at Mcburney's point.
   c) Mention the anatomical structure infected
   d) Describe its anatomical positions and blood supply.
6. Compare and contrast the microscopic features of the different zones of adrenal cortex with diagram.
7. Describe the boundaries and contents of superficial perineal pouch.
8. Describe the presenting parts, relations, and nerve supply of urinary bladder.
9. Describe the presenting parts, relations and ligaments of spleen.
10. Define Karyotyping. Describe the process briefly and group the chromosomes according to Denver's classification.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Mention the formation and termination of great saphenous vein.
12. Name the parts of pancreas developing from dorsal pancreatic bud. State the embryological basis of annular pancreas.
13. Mention the attachments, nerve supply and action of Sartorius.
14. Draw a neat labelled diagram showing the lymphatic drainage of stomach.

15. List the structures crossed by root of mesentery.
16. Enumerate the branches of anterior division of Internal iliac artery.
17. Mention the location and drainage of seminal vesicles.
18. Name any three branches of lumbar plexus.
19. Draw a neat labelled diagram of microscopic structure of ovary.
20. List any two differences between the microscopic structure of ureter and vas deferens.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Unlocking muscle of the Knee joint is
- E. Vastus intermedius
- F. Vastus medialis
- G. Popliteus
- H. Rectus femoris

21 ii) Eversion occurs at which of the following joint
- E. Subtalar
- F. Tibio talar joint
- G. Inferior tibio fibular
- H. Ankle

21 iii) Dorsalis pedis artery is a continuation of
- E. Anterior tibial artery
- F. Posterior tibial artery
- G. Popliteal artery
- H. Lateral tarsal artery

21 iv) Portal vein drains all **EXCEPT**
- E. Superior mesentric vein
- F. Splenic vein
- G. Left renal vein
- H. Left gastric vein

21 v) Lesser curvature of stomach is related to
- E. Left gastric artery
- F. Cystic artery
- G. Splenic artery
- H. Gastroduodenal artery

22 i) Which of the following structures is a content of pudendal canal
- E. Inferior gluteal artery
- F. Inferior epigastric artery
- G. Internal pudendal artery
- H. Internal Iliac artery

22 ii) Angle of anteflexion of uterus
- E. 90^0 – 95^0
- F. 100-105^0
- G. 110-115^0
- H. 120-125^0

22 iii) Which of the following is a derivative of Midgut
- E. Oesophagus
- F. Stomach
- G. First part of duodenum
- H. Third part of duodenum

22 iv) Barr body is
- E. Inactive X chromosome

F. Active X chromosome
G. Active Y chromosome
H. Inactive Y chromosome

22 v) Special identification feature of duodenum in histology
E. Peyer's patches
F. Submucosal Brunner's glands
G. Stratified squamous epithelium
H. Taenia coli

MBBS Phase – I (CBME) Degree Examination - 29/Sep/2025

Time: Three Hours **Max. Marks: 100**

PHYSIOLOGY – PAPER - I (RS-4, RS-5 & RS-6)
Q.P. CODE: 1022
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. List the neural centres of respiration and explain the neural regulation of breathing

2. Define circulatory shock. Mention the types of shock. Explain the various compensatory mechanisms in non progressive stage of shock

SHORT ESSAYS **8 x 5 = 40 Marks**

3. Explain the factors regulating glomerular filtration rate (GFR)
4. Describe Intrinsic pathway of clotting mechanism
5. A 45 yr old business man who had irregular sleep and food pattern, complains of heart burns, frequent burping. A physician prescribed him proton pump inhibitors (PPIs), from which he got some relief from above symptoms.
   d) What condition was he suffering from?
   e) Explain the basis for treating him with PPIs.
   f) Explain the factors regulating gastric acid secretion.
6. Describe the special features of coronary circulation.
7. Describe the renal handling of glucose.
8. Describe the phases of deglutition.
9. Describe the various types of heart blocks.
10. Explain the hazards of blood transfusion.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Tabulate the differences between first and second heart sounds
12. Define Erythrocyte Sedimentation Rate (ESR). what is the clinical significance of ESR?
13. Describe the physiological significance of Ventilation perfusion ratio.
14. Describe cutaneous vascular Triple response.
15. What are Gap junctions? Give example of their functional significance.

16. What are functions of bile salts?
17. Define Dead space. What are its types?
18. Draw a neat labelled diagram of Cystometrogram
19. Explain Bhor's effect.
20. List the various blood indicies. Write the formula and normal value of each.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Plasma protein responsible for clotting is
- E. Albumin
- F. Globulin
- G. Fibrinogen
- H. All of the above

21 ii) Type of ADH receptor present in kidney
- E. V_1
- F. V_2
- G. V_3
- H. V_{1B}

21 iii) Choleretic is
- E. Gastrin
- F. Secretin
- G. CCK- PZ
- H. Somatostatin

21 iv) Natural anticoagulant is
- E. Serotonin
- F. Histamine
- G. Heparin
- H. Calcium

21 v) Type of hypoxia where cyanosis does **NOT** occur
- E. Anemic hypoxia
- F. Hypoxic hypoxia
- G. Histotoxic hypoxia
- H. Stagnant hypoxia

22 i) Left shift of oxygen dissociation curve is due to
- E. Increased temperature
- F. Decreased p^H
- G. Increased 2,3 - DPG
- H. Myoglobin

22 ii) Indicator used to measure ECF is
- E. Inulin
- F. Antipyrine
- G. Deuterium oxide
- H. Tritium oxide

22 iii) Rh antibody is a type of
- E. Ig G
- F. Ig A
- G. Ig E
- H. Ig M

22 iv) PR interval indicates which of the following?

E. AV node conduction time
F. Ventricular repolarisation
G. Atrial depolarisation
H. Both A and C

22 v) Acquired immunity involves

E. Defense by Neutrophils
F. Defense by phagocytic cells
G. Defense by inflammation
H. Defense by T lymphocytes

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MBBS Phase – I (CBME) Degree Examination - 03/Oct/2025

Time: Three Hours **Max. Marks: 100**

PHYSIOLOGY – PAPER - II (RS-4, RS-5 & RS-6)
Q.P. CODE: 1023
(QP contains two pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Name the hormones secreted by anterior pituitary. Describe the actions of growth hormones. Add a note on gigantism
2. Define pain. Describe the pathway of pain. Add a note on endogenous pain analgesic system describe theories of referred pain with suitable examples

SHORT ESSAYS **8 x 5 = 40 Marks**

3. A 50-year-old female with breathlessness, nervousness, sleeplessness with a lump in the neck. Her resting heart rate is 100BPM. She experiences intolerance to heat.
   c) What is your probable diagnosis?
   d) Enumerate the steps in management
4. Describe Excitation contraction coupling
5. Explain the steps of spermatogenesis
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7. Describe the lesions of visual pathway with a neat labelled diagram
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SHORT ANSWERS **10 x 3 = 30 Marks**

11. Explain saltatory conduction in a nerve
12. Functions of progesterone
13. Clinical features of cretinism
14. Draw a neat labelled diagram of taste pathway
15. Physiological basis of female oral contraceptives
16. Features of brain death
17. Draw a neat labelled diagram of reflex arc
18. Explain Weber's Fechner's law
19. List the tests for cerebellar ataxia
20. Functions of CSF

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Multiple Choice Questions **10 x 1 = 10 Marks**

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- E. Growth hormone
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- H. Oxytocin

21 ii) Most effective female contraceptive for birth spacing
- E. Tubectomy
- F. Vasectomy
- G. Intra uterine contraceptive device
- H. Condom

21 iii) Cushing's syndrome result from increased exposure of body to high blood level of
- E. Glucocorticoids
- F. Mineralocorticoids
- G. Catecholamines
- H. Sex steroids

21 iv) Somatosensory cortex is present in
- E. Frontal lobe
- F. Temporal lobe
- G. Parietal lobe
- H. Occipital lobe

21 v) Resting tremors are characteristic feature of
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- F. Motor neuron disease
- G. Hepatic encephalopathy
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- G. Olfactory bulb
- H. The organ of corti

22 iv) inhibitory neurotransmitter in nervous system
- E. Acetyl choline
- F. Gamma amino butyric acid
- G. Glutamate
- H. Dopamine

22 v) All of the following animals are poikilothermic **EXCEPT**
- E. Reptiles
- F. Humans
- G. Amphibian
- H. Fish

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MBBS Phase – I (CBME) Degree Examination - 06/Oct/2025

Time: Three Hours **Max. Marks: 100**

BIOCHEMISTRY – PAPER I (RS-4, RS-5 & RS-6)
QP Code: 1024
(QP contains three pages)

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. A 5 year old child was brought to the hospital with complaints of slow growth and pain in bones. On examination, he was anaemic, had frontal bossing, bowing of legs and swelling of costochondral junction. Following are his laboratory findings:
   Serum calcium: 8.6 mg/ dL, Serum phosphorous: 2.6 mg/dL, and Serum alkaline phosphatase: 700 U/L.
   a) Mention the vitamin deficiency in this child.
   b) Describe the Sources, Formation, Biochemical functions and recommended dietary allowance (RDA) of above vitamin.
2. Explain the factors affecting enzyme activity. Mention two therapeutic importance of enzymes.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. A 44 year old male presented with chest pain. Family history shows that his father died of a heart attack at the age of 46 years, and his elder brother also had a heart attack at the same age. The patient reports that he gets chest pain occasionally with ambulation and is not able to climb stairs without significant chest pain and shortness of breath. His Serum cholesterol was 440.0 mg/dl.
   a) What is the probable cause for hyperlipidemia in this case?
   b) Name two hyperlipoproteinemias along with their biochemical defect.
   c) Mention one lipid lowering drug along with its mechanism of action
4. A 25 year old female during her second pregnancy had a glucose tolerance test and her results are as follows. Fasting glucose level: 125 mg/dL, first hour glucose level: 210 mg/dL, and second hour glucose level: 170 mg/dL.
   a) Interpret the above laboratory findings.
   b) Name the types of diabetes mellitus.
   c) Mention the biochemical tests used to monitor diabetes and its complications.
5. Define Basal metabolic rate. Discuss the factors affecting it.
6. Classify phospholipids. Write their functions.
7. Describe electron transport chain. Mention two inhibitors of electron transport chain.
8. List five subcellular organelles and enumerate their functions.
9. Write the causes and laboratory findings in Iron deficiency anemia.
10. Define and Classify carbohydrates with examples.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. Mention the mechanisms involved in maintenance of blood pH.
12. List the hormones involved in homeostasis of calcium.
13. What is hypernatremia? Mention two clinical conditions associated with hypernatremia.

14. Mention the cause and clinical features of scurvy.
15. Enumerate three coenzymes with their functions.
16. HDL – cholesterol is called good cholesterol - justify.
17. List the biologically important Products obtained from cholesterol.
18. What is Metabolic acidosis? Mention two causes for it.
19. Mention three proteins present in extracellular matrix.
20. Mention the key enzymes catalyzing irreversible steps in gluconeogenesis.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) Glucose level in plasma is increased by
- A. Gluconeogenesis
- B. Glycolysis
- C. Glycogen synthesis
- D. Glycosuria

21 ii) The end product of glycolysis in erythrocytes is
- A. NADPH
- B. Lactate
- C. Pyruvate
- D. Carbon dioxide

21 iii) Ketone bodies are mainly produced in
- A. Brain
- B. Liver
- C. Erythrocytes
- D. Skeletal muscles

21 iv) Reference range for total serum calcium is
- A. 0.6-1.4 mg/dl
- B. 9-11 mg/dl
- C. 15-40 mg/dl
- D. 70-110 mg/dl

21 v) Koilonychia or spoon nail is seen in
- A. Iron deficiency anaemia
- B. Megaloblastic anaemia
- C. Scurvy
- D. Rickets

22 i) Methionine is a limiting amino acid in
- A. Cereals
- B. Maize and corn
- C. Pulses
- D. Tapioca

22 ii) Calories generated per gram of fat is
- A. 4 kcal
- B. 5 kcal
- C. 8 kcal
- D. 9 kcal

22 iii) When pH falls by 1 unit, hydrogen ion concentration
- A. Remains same
- B. Increases by 2 times
- C. Increases by 7 times
- D. Increases by 10 times

22 iv) Administration of diuretics cause loss of potassium, which may lead to
- A. Respiratory acidosis
- B. Respiratory alkalosis
- C. Metabolic acidosis
- D. Metabolic alkalosis

22 v) Major intracellular cation is
- A. Magnesium

B. Potassium
C. Sodium
D. Calcium

MBBS Phase – I (CBME) Degree Examination - 08/Oct/2025

Time: Three Hours **Max. Marks: 100**

BIOCHEMISTRY – PAPER II (RS-4, RS-5 & RS-6)
Q.P. CODE: 1025
(QP contains three pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. An adolescent girl presented with subluxation of lens and mental retardation. On examination, she was tall and thin with elongated limbs. Skeletal deformities genu valgum was also noted. She had a typical Charlie Chaplin gait. Family history suggested that one of her sisters also had similar complaints. A provisional diagnosis of homocystinuria was made and she was subjected to further investigations for confirmation of diagnosis.
    a) Name the sulphur containing amino acids.
    b) Mention the enzyme deficiency in above disorder.
    c) Describe the pathway for metabolism of sulphur containing amino acids.
    d) Give four examples of transmethylation reactions.

2. Define translation. Describe the process of translation in eukaryotes. Mention three post-translational modifications and write their significance.

SHORT ESSAYS **8 x 5 = 40 Marks**

3. A 40-year-old female presented to the clinic with lump in the right breast. A mammogram performed revealed a breast mass measuring 3 cm with numerous micro calcifications suggestive of breast cancer. Family history revealed that she had a sister who was diagnosed with breast cancer at the age of 53.
    a) Define oncogene and proto-oncogene
    b) Name the factors which activate oncogenes
    c) Name any two tumor markers and write their clinical importance

4. A 36-year-old female presented to Medicine OPD with history of intermittent abdominal pain, vomiting, episodes of confusion and neurological manifestations. There was no history of photosensitivity. Provisional diagnosis indicated it could be a case of acute intermittent porphyria.
    a) Name the enzyme defect in the above clinical condition.
    b) Name two other porphyrias indicating the enzyme defects.
    c) Mention two biochemical tests done to detect porphyrins.

5. Define Polymerase Chain Reaction (PCR). Describe the steps in PCR. Mention two applications of PCR.

6. Explain the significance of measurement of enzymes to assess liver function.

7. Mention the structural organization of proteins. Describe secondary structure with suitable examples.

8. Define antioxidants. Explain the role of enzymes as antioxidants.

9. Describe the salvage pathway for purines. Name the disorder associated with salvage pathway for purines.

10. Define creatinine clearance. Mention the formula for calculating creatinine clearance. Write the reference range for creatinine clearance. Explain the advantages of creatinine

clearance to assess renal function.

SHORT ANSWERS **10 x 3 = 30 Marks**

11. What are acute phase proteins? Mention two positive and negative acute phase proteins with their clinical significance.
12. State the immunological basis of vaccine development along with examples.
13. Compare and contrast between nucleoside and nucleotide.
14. Mention the biochemical basis for manifestations in gout.
15. Write the biochemical basis of use of alkylating agents, antimetabolites and topoisomerase inhibitors in cancer therapy.
16. Define single nucleotide polymorphism (SNP). Mention its clinical importance.
17. Define (a) Precision (b) Accuracy (c) External quality control.
18. Define jaundice. List two clinical conditions associated with obstructive jaundice.
19. Give one example each of detoxification reactions by conjugation with
    (a) Glycine (b) Glutathione (c) Glucuronic acid
20. List the applications of gene therapy.

Multiple Choice Questions **10 x 1 = 10 Marks**

21 i) The chief product of catabolism of purines in humans is
- E. Ammonia
- F. Uric acid
- G. Bilirubin
- H. Lactate

21 ii) Which of the following statement is TRUE regarding denatured proteins?
- A. Denatured proteins are soluble
- B. Denaturation makes the protein inactive
- C. Proteins are difficult to digest after denaturation
- D. Peptide bonds are broken during denaturation process

21 iii) Which of the following immunoglobulins can cross placental barrier?
- A. IgG
- B. IgM
- C. IgD
- D. IgE

21 iv) Pellagra like symptoms is seen in which of the following disorders?
- A. Maple Syrup Urine disease
- B. Albinism
- C. Homocystinuria
- D. Hartnup's disease

21 v) The end sequence at 3' end of t-RNA is
- A. AUG
- B. UGA
- C. CCA
- D. UUU

22 i) Sigma factor is a subunit of
- A. DNA polymerase
- B. RNA polymerase
- C. 50S ribosome
- D. RNA primase

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MBBS Phase – I (CBME) Degree Examination - 08/Oct/2025

Time: Three Hours **Max. Marks: 100**

BIOCHEMISTRY – PAPER II (RS-4, RS-5 & RS-6)
Q.P. CODE: 1025

22 ii) Heme is converted to bilirubin in
- A. Microsomes
- B. Golgi bodies
- C. Peroxisomes
- D. Plasma membrane

22 iii) Molecular scissors are
- A. Taq polymerases
- B. Topoisomerases
- C. Restriction endonucleases
- D. DNA ligases

22 iv) Which of the following is an anti-cancer drug?
- A. Zidovudine
- B. Acyclovir
- C. Allopurinol
- D. 6-mercaptopurine

22 v) All of the following cells produce free radicals **EXCEPT**
- A. Macrophages
- B. Neutrophils
- C. Erythrocytes
- D. Basophils

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MBBS Phase – I Degree Examination – 26/Sep/2025

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER - II (RS-3)
Q.P. CODE: 1076

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the sciatic nerve under the following headings
   (a) Root value
   (b) Formation
   (c) Branches of distribution
   (d) Applied aspects

2. Describe Gross anatomy of inguinal canal. Add a note on its applied anatomy

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Popliteus muscle
4. Mesentery
5. Posterior relations of Kidneys
6. Perineal membrane
7. Histology of supra renal gland
8. Development of uterus
9. Turner's syndrome
10. Prostate gland
11. Coeliac trunk
12. Development of caecum and vermiform appendix

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Great saphenous vein
14. Lymphatic drainage of stomach
15. Barr body
16. Branches of internal iliac artery
17. Femoral sheath
18. Histology of oesophagus
19. Ligaments of spleen
20. Derivatives of foregut
21. Douglas pouch
22. Transpyloric plane

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I Degree Examination - 29/Sep/2025

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY – I (RS3)
Q.P. CODE: 1077

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Define cardiac output and give its normal value. Describe the factors affecting cardiac output. Add a note on measurement of cardiac output
2. Define glomerular filtration rate. Describe the factors regulating it.

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Conducting system of the heart.
4. Describe steps involved in Phagocytosis
5. Describe extrinsic method of coagulation. Add a note on anticoagulants.
6. List the gastro intestinal hormones. Describe any two of them.
7. Functions of bile.
8. Name and describe different types of Hypoxia
9. Long term regulation of BP
10. Features of coronary circulation.
11. Types of shock with examples
12. Sodium potassium pump.

SHORT ANSWERS **10 x 3 = 30 Marks**

13. Law of gut
14. Functional residual capacity
15. Indications for blood transfusion
16. Hypotension.
17. Bohr's effect.
18. Substances used to measure total body water and ECF (Extra Cellular Fluid) space
19. Landsteiner's law
20. List the functions of HCl in stomach.
21. Sham feeding
22. Gall stones

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase - I Degree Examination – 03/Oct/2025

Time: Three Hours **Max. Marks: 100 Marks**

PHYSIOLOGY - II (RS3)
QP Code: 1078

Your answers should be specific to the questions asked
Draw neat labeled diagrams wherever necessary

LONG ESSAYS **2 x 10 = 20 Marks**

1. Describe the functions and regulation of glucocorticoids. Add a note on Cushing's syndrome.
2. Describe the connections and functions of cerebellum. Explain the tests and disorders of cerebellum.

SHORT ESSAYS **10 x 5 = 50 Marks**

3. Functions and mechanism of action of Insulin
4. Menstrual cycle
5. Excitation-contraction coupling
6. Describe the Pathway for pain. Add a note on referred pain.
7. Milk ejection reflex
8. Functions of Limbic system
9. Explain any three properties of skeletal muscle
10. Theories of hearing
11. Visual pathway and its lesions
12. Functions of placenta

SHORT ANSWERS **10 x 3 = 30 Marks**

13. What are the normal waves of EEG? What is alpha block?
14. Functions of ADH. Add a note on diabetes insipidus
15. What is motor unit? Give its physiological importance.
16. Olfactory pathway and its disorders
17. What is deafness? Mention its types
18. Compare isotonic and isometric contractions in skeletal muscle
19. Phantom limb
20. Ovulation
21. Contraceptive pills
22. Hyperthyroidism

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MBBS Phase – I Degree Examination - 06/Oct/2025

Time: Three Hours **Max. Marks: 50 Marks**

BIOCHEMISTRY – PAPER I (RS3)
Q.P. CODE: 1079

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary
(Note: Both QP Codes 1079 and 1080 are to be, answered within total duration of three hours)
(Use separate Answer books for QP Code 1079 & 1080)

LONG ESSAYS **1 x 10 = 10 Marks**

1. Name the aromatic amino acids. Discuss how phenyl alanine is catabolised in the body. Add a note on phenyl Ketonuria.

SHORT ESSAYS **5 x 5 = 25 Marks**

2. Glucose tolerance tests
3. Glycogen synthesis and its regulation
4. Specialized products from tyrosine
5. Formation and utilization of ketone bodies.
6. Competitive inhibition.

SHORT ANSWERS **5 x 3 = 15 Marks**

7. Classification of proteins based on function.
8. Essential fatty acids.
9. Phase I detoxification
10. Specialized products formed from tryptophan
11. Lipotropic factors

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I Degree Examination - 06/Oct/2025

Time: Three Hours **Max. Marks: 50 Marks**

BIOCHEMISTRY – PAPER II (RS3)
QP Code: 1080

Your answers should be specific to the questions asked.
Draw neat labeled diagrams wherever necessary.
(Note: Both QP Codes 1079 and 1080 are to be, answered within total duration of three hours)
(Use separate Answer books for QP Code 1079 & 1080)

LONG ESSAYS **1 x 10 = 10 Marks**

1. Describe the process of transcription and add a note **on** post transcriptional modification.

SHORT ESSAYS **5 x 5 = 25 Marks**

2. Protein energy malnutrition
3. **Dietary sources, coenzyme forms and biochemical functions of folic acid.**

   Or

   Creatinine clearance test
4. **Dietary fibre.**

   Or

   Hypokalemia
5. **Gout**
6. Genetic code

SHORT ANSWERS **5 x 3 = 15 Marks**

7. **Lesch-Nyhan syndrome**
8. **Wilsons disease**

   Or

   Urobilinogen
9. Oncogenes
10. **Vitamin K**

    Or

    Antioxidants
11. Functions of albumin

Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 26/Sep/2025

Time: Three Hours **Max. Marks: 100**

ANATOMY – PAPER – II (RS-7)
Q.P. CODE: 5502
(QP Contains Four Pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAY **1 x 10 = 10 Marks**

1. Describe liver under
   a) Location and extent
   b) Gross features
   c) Visceral relations
   d) Peritoneal folds
   e) Arterial supply

REASONING QUESTIONS (Short Answer) **5 x 3 = 15 Marks**

2. A 20-gauge spinal needle is placed through the vagina to assess whether there is blood in the peritoneal cavity. Which peritoneal pouch describes the most dependent part of the peritoneum of female pelvis? Give its boundaries?
3. Which viscera is inflamed when there is tenderness at McBurney's point? Describe the blood supply to this organ
4. What is the embryological basis of congenital polycystic kidney?
5. Substantiate how you differentiate histological features of proliferative and secretory phase of uterus
6. Differentiate between the autosomal dominant and the autosomal recessive pattern of inheritance with examples

SHORT NOTES **4 x 5 = 20 Marks**

7. Give the boundaries and contents of the popliteal fossa. What is a popliteal aneurysm?
8. A 25-year old married female patient, diagnosed with tuberculosis, came for treatment of blockage of fallopian tube. Describe gross features, ligaments and blood supply of fallopian tube
9. Describe the boundaries and contents of inguinal canal with its applied aspects.
10. Describe the midgut rotation. Add a note on the embryologic basis of Meckel's diverticulum

SHORT NOTES **7 x 5 = 35 Marks**

11. Explain the boundaries and contents of the adductor canal
12. Describe the microscopic structure of Suprarenal gland
13. Classify and describe the supports of the Uterus
14. Describe the root value, course and branches of femoral nerve.

15. Explain the numerical chromosomal abnormalities with examples

16. Describe the coverings and blood supply of the testis

17. What is the importance of Communication in medical practice

MULTIPLE CHOICE QUESTIONS (All scenario based) 20 x 1 = 20 Marks

18 A first-year medical student is confused in identifying the slide of Ureter.

18 (i) Which of the following features helps the student in identification?

I. It has submucosal glands
J. lamina propria is absent
K. It is lined by transitional epithelium
L. It contains inner circular and an outer longitudinal layer of smooth muscles

18 (ii) Which of the following special cells are present in the epithelium of the ureter?

A. Paneth cells
B. Clara cells
C. Peg cells
D. Umbrella cells

19 A new-born baby had vomiting after milk feeding and was diagnosed as having congenital pyloric stenosis.

19 (i) What is the structural deformity?

A. Abnormally thickened muscular wall at pyloric end of stomach
B. Diverticulum at the level of pylorus
C. Missing part of gut
D. Fibrous tissue at the level of pylorus

19 (ii) Stomach develops from which part of the embryonic gut tube

A. Prelaryngeal part of foregut
B. Postlaryngeal part of foregut
C. Midgut
D. Hindgut

20 During surgery of gall bladder, the doctor inserted his index finger into the epiploic foramen.

20 (i) Which of the following forms the posterior boundary of the foramen

A. Portal vein
B. Proper hepatic artery
C. Bile duct
D. Inferior vena cava

20 (ii) Which of the following parts of gall bladder projects from inferior border of liver

A. Isthmus
B. Neck
C. Body
D. Fundus

21 A 55-year-old woman was admitted to the hospital with severe abdominal pain. Gastroscopy and CT scan examinations revealed a perforating ulcer in the posterior wall of the stomach.

21 (i) Where would peritonitis most likely develop initially?

A. Right subdiaphragmatic space
B. Hepatorenal pouch of Morrisson
C. Rectouterine Pouch of Douglas
D. Lesser sac

21 (ii) Which of the following arteries is related to the posterior wall of stomach?

A. Left Gastric artery
B. Right renal artery
C. Superior mesenteric artery
D. Splenic artery

22 During splenectomy, a surgeon carefully dissects the peritoneal ligament containing the splenic vessels at the hilum of spleen.

22 (i) Which of the following peritoneal ligaments is dissected by the surgeon

A. Gastrosplenic
B. Lienorenal
C. Phrenicocolic
D. Gastrophrenic

22 (ii) Which of the following peritoneal ligaments connect liver and stomach

A. Falciform ligament
B. Coronary ligament
C. Lesser omentum
D. Greater omentum

23 A 36-year old female patient complains of abdominal discomfort on and off since 6 months, on investigation CT scan showed carcinoma of head of the pancreas

23 (i) Which structure can be compressed by the tumor?

A. Right and left Hepatic ducts
B. Common hepatic duct
C. Cystic duct
D. Common bile duct

23 (ii) The Normal capacity of the gall bladder in milliliters is

A. 10 -20
B. 30-50
C. 100-120
D. 120-140

24 25-year-old woman is brought to the emergency room in severe pain due to an ankle injury, causing her foot to turn extremely outward (eversion).

24 (i) Which of the following ligaments is most likely damaged?

A. Plantar calcaneonavicular (spring) ligament
B. Plantar calcaneocuboid (long plantar) ligament
C. Anterior talofibular ligament
D. Deltoid ligament

24 (ii) Ankle joint is which type of synovial joint?

A. Saddle
B. Ball and Socket
C. Hinge
D. Pivot

25 A 50-year old female complained of pain in her right knee and was diagnosed as osteoarthritis. The pain was felt in her right hip as well and continued even after 2 months of physiotherapy.

25 (i) Which nerve is responsible for pain in the right knee and hip joint?

A. Superior gluteal
B. Sciatic
C. Femoral
D. Obturator

25 (ii) Root value of the nerve in above condition is ….
A. Dorsal division of ventral primary rami of L2,3,4
B. Dorsal division of dorsal primary rami of L2,3,4
C. Ventral division of ventral primary rami of L2,3,4
D. Ventral division of dorsal primary rami of L2,3,4

26 A 45-year-old woman with uterine fibroids underwent a complete hysterectomy, and the uterine artery was ligated near the junction of the uterus and vagina during the procedure.

26 (i) What structure would most likely be at risk during the ligation of the uterine artery?
A. Ureter
B. Pudendal nerve
C. Obturator artery
D. Ovarian artery

26 (ii) Uterine artery is a content of which of the following ligaments of uterus?
A. Broad ligament
B. Round ligament of uterus
C. Transverse cervical ligament
D. Pubocervical ligament

27 Radiographic studies of a 42-year-old woman reveal that she has a vulvar malignancy involving the clitoris. Removal of all affected lymph nodes would be indicated to avoid spread of this cancer.

27 (i) Which are the first lymph nodes to filter the lymphatic drainage of the involved area?
A. Superficial and deep inguinal lymph nodes
B. Internal iliac nodes
C. Preaortic nodes
D. Presacral lymph nodes

27 (ii) Which of the following cutaneous nerve of thigh gives rise to a perineal branch?
A. Medial femoral
B. Intermediate femoral
C. Lateral femoral nerve
D. Posterior femoral

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination -29/Sep/2025

Time: Three Hours **Max. Marks: 100**

PHYSIOLOGY – PAPER – I (RS-7)
Q.P. CODE: 5503
(QP Contains Four Pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAY **1 x 10 = 10 Marks**

1. Define blood pressure. Enumerate the factors that affect it in humans. Describe the short term regulatory mechanisms of blood pressure.

Reasoning questions (Short Answer) **5 x 3 = 15 Marks**

2. Explain why capillaries are known as exchange vessels.
3. Explain why peak expiratory flow rate is used for screening in bronchial asthma.
4. Explain why immune system does not attack its own tissues.
5. Explain how collateral circulation has a life-saving role in patients of myocardial infarction.
6. Explain why spleen is called as graveyard of RBCs?

SHORT NOTES **4 x 5 = 20 Marks**

7. A 22-year-old male presents to the emergency department with oliguria, facial puffiness, and periorbital edema for 3 days following a recent sore throat 2 weeks ago. On examination, he has mild hypertension and pitting pedal edema. Urinalysis shows hematuria, proteinuria, and RBC casts. His blood urea nitrogen (BUN) and serum creatinine are elevated. Serum complement C3 is reduced. The physician suspects acute glomerulonephritis.
    a) Explain the basis of edema in this condition
    b) Explain the factors affecting glomerular filtration rate.
8. A 19-year-old first-year MBBS student participates in a 100-meter sprint during the college sports meet. Immediately after the race, she experiences rapid breathing and a pounding heartbeat. On examination (immediately post-run): Pulse: 132/min, regular, BP: 140/85 mm Hg, Respiratory rate: 28/min, Heart sounds: Normal S1 and S2, no murmurs, after 5 minutes rest: Pulse returns to 78/min and BP to 118/76 mm Hg
    a) Explain the basis of increase in heart rate and respiratory rate.
    b) How cardiac output rises during exercise?
9. Describe basic electrical rhythm (BER) and its significance.
10. Explain the tubular transport maximum and its significance using glucose as an example.

SHORT NOTES **7 x 5 = 35 Marks**

11. Describe Functional Residual Capacity and its physiological significance.
12. Describe the features of Acute mountain sickness. How it can be overcome physiologically?
13. Describe the features and pathophysiology of Iron deficiency anemia.
14. Describe the movements of small intestine.
15. Classify anti-coagulants. Describe the role of heparin as an anti-coagulant.
16. Describe active transport mechanisms with examples.

17. Describe the duties of a physician in general, towards patients and to the community that he serves.

MULTIPLE CHOICE QUESTIONS (All scenario based) 20 x 1 = 20 Marks

18 A 19-year-old male athlete faints during intense training. His resting heart rate is 42 bpm, and blood pressure is 108/70 mmHg. On examination, there is bradycardia**,** but no structural heart disease is found. The physician suspects increased vagal tone due to athletic conditioning

18 (i) Which structure in the heart primarily determines the resting heart rate in this individual?

A. Atrioventricular node
B. Bundle of His
C. Purkinje fibers
D. Sinoatrial node

18 (ii) Which parasympathetic neurotransmitter is responsible for the observed bradycardia?

A. Adrenaline
B. Acetylcholine
C. Dopamine
D. Noradrenaline

19 A 22-year-old woman presents with fatigue, pallor, and shortness of breath on exertion. Her blood test shows: Hemoglobin: 8.0 g/dL, MCV: 70 fL (microcytic), Serum ferritin: low. Her physician diagnoses her with iron deficiency anemia and starts her on iron supplements.

19 (i) Which of the following is the primary site of erythropoietin (EPO) production in adults?

A. Liver
B. Spleen
C. Red bone marrow
D. Kidney

19 (ii) Which of the following is the earliest committed precursor in the red blood cell lineage?

A. Reticulocyte
B. Myeloblast
C. Proerythroblast
D. Megakaryoblast

20 A 65-year-old man suddenly stands up from bed after prolonged bed rest. He immediately feels dizzy and lightheaded. His blood pressure drops to 88/60 mmHg, and his heart rate rises to 110 bpm. The condition improves when he lies back down.

20 (i) Which physiological reflex is primarily responsible for maintaining blood pressure during sudden postural changes?

A. Chemoreceptor reflex
B. Bainbridge reflex
C. Cushing reflex
D. Baroreceptor reflex

20 (ii) Which of the following accurately describes the autonomic response in this patient during the hypotensive episode?

A. ↑ Parasympathetic tone, ↓ Sympathetic tone
B. ↓ Parasympathetic tone, ↓ Sympathetic tone
C. ↑ Parasympathetic tone, ↑ Sympathetic tone
D. ↓ Parasympathetic tone, ↑ Sympathetic tone

21 A 50-year-old male with long-standing diabetes mellitus presents with swelling in his legs and frothy urine**.** Urinalysis reveals proteinuria**,** and his estimated glomerular filtration rate (eGFR) is reduced. He is diagnosed with diabetic nephropathy**.**

21 (i) Which of the following pressures opposes glomerular filtration in the kidney?

A. Glomerular capillary hydrostatic pressure
B. Bowman's space hydrostatic pressure
C. Afferent arteriolar pressure
D. Renal blood flow

21 (ii) Which part of the nephron is primarily responsible for the reabsorption of filtered bicarbonate (HCO_3^-)?

A. Proximal convoluted tubule
B. Thick ascending limb of Henle
C. Distal convoluted tubule
D. Collecting duct

22 A 70-year-old woman with long-standing hypertension presents with fatigue and swelling in her legs. Echocardiography reveals left ventricular hypertrophy and reduced stroke volume. Her ejection fraction is borderline low. The physician explains that increased afterload due to systemic hypertension is likely affecting her cardiac output.

22 (i) Which of the following best describes the effect of increased afterload on stroke volume in this patient?

A. Stroke volume increases due to increased preload
B. Stroke volume increases due to increased contractility
C. Stroke volume decreases due to increased resistance
D. Stroke volume is unaffected by afterload

22 (ii) Which of the following is a major determinant of afterload in the left ventricle?

A. Heart rate
B. Venous return
C. Aortic pressure
D. Myocardial oxygen demand

23 A 65-year-old man with a long history of smoking presents with progressive shortness of breath and chronic cough. Pulmonary function tests reveal a decreased FEV1/FVC ratio and his chest X-ray shows hyperinflated lungs. He is diagnosed with emphysema, a form of chronic obstructive pulmonary disease (COPD).

23 (i) Which of the following lung volumes is typically increased in patients with emphysema?

A. Tidal volume
B. Inspiratory reserve volume
C. Expiratory reserve volume
D. Residual volume

23 (ii) What is the primary mechanism for gas exchange at the alveolar-capillary membrane?

A. Active transport
B. Bulk flow
C. Diffusion
D. Filtration

24 A 62-year-old man with a history of chronic heart failure presents with shortness of breath and swelling in his lower limbs. On examination, his jugular venous pressure is elevated, and there is bilateral pedal edema. Echocardiogram shows dilated ventricles with reduced ejection fraction.

24(i) Which of the following best explains the mechanism by which increased end-diastolic volume leads to increased stroke volume in a healthy heart?

A. Increase in myocardial oxygen consumption
B. Increase in afterload
C. Frank-Starling mechanism
D. Decrease in preload

24 (ii) What is the most important determinant of venous return in the systemic circulation?

A. Atrial pressure
B. Blood volume
C. Total peripheral resistance
D. Mean systemic filling pressure

25 A 45-year-old mountain climber ascends to a high altitude (4,500 meters) and experiences headache, dizziness, and breathlessness. Arterial blood gas analysis shows low PaO_2 and mild respiratory alkalosis. His symptoms are attributed to high-altitude hypoxia.

25 (i) Which of the following changes occurs immediately in response to high altitude exposure?

A. Increased erythropoietin synthesis
B. Metabolic acidosis
C. Hypoventilation
D. Hyperventilation due to peripheral chemoreceptor activation

25 (ii) Which of the following shifts the oxygen-hemoglobin dissociation curve to the right?

A. Decreased temperature
B. Decreased CO_2
C. Increased 2,3-BPG
D. Increased pH

26 A 55-year-old man presents to the emergency department with chest discomfort and palpitations. An ECG shows absent P waves and an irregularly irregular rhythm. The attending physician diagnoses him with atrial fibrillation.

26 (i) In a normal ECG, what does the P wave represent?

A. Ventricular depolarization
B. Ventricular repolarization
C. Atrial depolarization
D. Atrial repolarization

26 (ii) Which of the following structures is responsible for the delay in impulse conduction between the atria and the ventricles?

A. SA node
B. AV node
C. Bundle of His
D. Purkinje fibers

27 A 45-year-old woman presents with right upper quadrant pain, jaundice, and pale stools. Ultrasound reveals gallstones obstructing the common bile duct. Laboratory investigations show elevated bilirubin and alkaline phosphatase levels. She is diagnosed with obstructive jaundice.

27 (i) Which of the following is a primary function of bile salts in the gastrointestinal tract?

A. Activation of pepsinogen
B. Digestion of carbohydrates
C. Emulsification of dietary fats
D. Secretion of intrinsic factor

27 (ii) In obstructive jaundice, absorption of which vitamin is most likely impaired?

A. Vitamin B12
B. Vitamin C
C. Vitamin D
D. Vitamin B1

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Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 03/Oct/2025

Time: Three Hours **Max. Marks: 100**

PHYSIOLOGY – PAPER – II (RS-7)
Q.P. CODE: 5504
(QP Contains Four Pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAY **1 x 10 = 10 Marks**

1. Describe the pyramidal tracts using neat labelled diagram. Add a note on Babinski's sign

REASONING QUESTIONS (Short Answer) **5 x 3 = 15 Marks**

2. Why the action of excess aldosterone secretion doesn't persist for long term?
3. Explain why resting membrane potential is electro-negative.
4. .Explain why diabetes mellitus is a disease of 'starvation amidst plenty.'
5. Explain how glucocorticoids have a life-saving role in anaphylaxis.
6. Explain why a patient continues to feel pain even in amputated limb.

SHORT NOTES **4 x 5 = 20 Marks**

7. A couple having no children despite 5 years of marriage approaches a doctor who orders some investigation after history is taken along with examination. A diagnosis of primary infertility is made. Enumerate its causes and the investigations required for this case.

8. A 26 years old policeman was brought to emergency department with a gun shot injury in his upper lumbar spine. Patient was conscious and reported that he felt as if his body had been 'cut into half'. On examination, complete loss of sensory, motor and autonomic functions below the site of the lesion.
   What is the diagnosis and explain the basis for the changes noticed below the level of lesion?

9. What is Rigor mortis? Explain its basis and medicolegal importance.

10. Explain the theories of referred pain.

SHORT NOTES **7 x 5 = 35 Marks**

11. Describe the structure of sarcomere in skeletal muscle.

12. Describe the visual pathway and the effect of its lesions.

13. Discuss the hormones involved in maintenance of calcium balance.

14. Discuss the role of middle ear in hearing.

15. Describe different phases of menstrual cycle with hormonal changes.

16. Describe the features of Addison's disease.

17. Discuss the types of doctor-patient relationship.

MULTIPLE CHOICE QUESTIONS (All scenario based) **20 x 1 = 20 Marks**

18 A 30-year-old woman reports difficulty with peripheral vision**.** On perimetry examination visual field defect was noted. MRI reveals a pituitary tumor compressing the optic chiasma.

18 (i) Which of the following visual field defects is most characteristic of optic chiasma compression?

A. Right homonymous hemianopia
B. Left homonymous hemianopia
C. Bitemporal hemianopia
D. Central scotoma

18 (ii) Which fibers of the visual pathway are compressed to produce the above mentioned visual defect?

A. Temporal retinal fibers
B. Nasal retinal fibers
C. Optic nerve fibers
D. Optic tract fibers

19 Rajesh, a trained athlete is a sprinter and also participates in marathons regularly. He practices running as a part of training-

19 (i) Trained athletes compared to untrained individuals have

A. Large stroke volume and lower heart rate
B. Smaller stroke volume and higher heart rate.
C. Smaller size of heart.
D. Decreased incidence of severity of myocardial infarction.

19 (ii) In athletes, bradycardia is because of –

A. Increased sympathetic tone.
B. Increased vagal tone
C. Decreased cardiac output
D. Low venous return

20 A 32-year-old man complains of infertility. Semen analysis shows low sperm count and poor motility-

20 (i) Sperm motility is decreased in

A. Alkaline pH
B. Neutral pH
C. Acidic pH
D. Normal saline

20 (ii) In the testis, the cells that secrete testosterone –

A. Germinal epithelium
B. Leydig cells
C. Sertoli cells
D. Sperm cells

21 A physiology student is conducting an experiment on sensory perception. She observes that to perceive a difference in weight, a person must add 5 grams to a 50-gram weight, but must add 10 grams to a 100-gram weight. She concludes that the perceived intensity of sensation is not directly proportional to the actual stimulus intensity.

21 (i) Which law explains the relationship between stimulus intensity and perceived sensation described in this experiment?

A. Bell-Magendie Law
B. All-or-None Law

C. Weber-Fechner Law
D. Law of Projection

21 (ii) Law of projection deals with
A. Frequency discrimination
B. Receptive field organization
C. perception of the site of sensation
D. Two point discrimination.

22 A 22-year-old man accidentally touches a hot pan and immediately withdraws his hand. He feels sharp, localized pain followed by a dull, aching sensation. This sequence of pain perception is due to the type of nerve fibers involved in transmitting nociceptive stimuli.

22 (i) Which type of nerve fibers is responsible for the immediate, sharp pain experienced by the patient?
A. A-alpha fibers
B. A-delta fibers
C. B fibers
D. C fibers

22 (ii) Nociceptive stimuli are transmitted by-
A. Naked nerve endings
B. Pacinian corpuscles
C. Merkel's disc
D. Ruffini end organ

23 A new mother is breastfeeding her infant. The baby's suckling stimulates a neuroendocrine reflex that causes milk ejection. This reflex involves coordinated activity between the nervous system and endocrine glands.

23 (i) Which hormone is primarily responsible for causing milk ejection (let-down) during breastfeeding?
A. Prolactin
B. Oxytocin
C. Estrogen
D. Progesterone

23 (ii) Which part of the nervous system mediates the sensory input from nipple stimulation to trigger milk ejection?
A. Parasympathetic nervous system
B. Somatic nervous system
C. Sympathetic nervous system
D. Hypothalamo-neurohypophyseal system

24 An elderly woman complains of decreased exercise tolerance and easy fatigability. Clinical examination reveals reduced cardiac output and stiffening of blood vessels. These changes are commonly seen as part of the normal aging process

24 (i) Which of the following cardiovascular changes is typically observed with aging?
A. Increased maximum heart rate
B. Decreased compliance of blood vessels
C. Increased stroke volume
D. Enhanced baroreceptor sensitivity

24 (ii) Which of the following is a typical respiratory system change seen in aging?
A. Increased lung elasticity
B. Increased vital capacity
C. Decreased chest wall compliance
D. Increased alveolar surface area

25 A 30-year-old woman presents with symptoms of weight loss, heat intolerance, and palpitations. Laboratory tests reveal elevated levels of T3 and T4 with suppressed TSH. This clinical picture suggests hyperthyroidism

25 (i) Which hormone is directly responsible for increasing basal metabolic rate in target tissues?

A. Thyroxine (T4)
B. Calcitonin
C. Tri-iodothyronine (T3)
D. Parathyroid hormone

25 (ii) Which of the following is the main regulatory hormone controlling thyroid hormone secretion?

A. Growth hormone-releasing hormone (GHRH)
B. Thyrotropin-releasing hormone (TRH)
C. Corticotropin-releasing hormone (CRH)
D. Gonadotropin-releasing hormone (GnRH)

26 A 28-year-old woman presents with regular menstrual cycles and no signs of pregnancy. She is in the mid-cycle phase of her menstrual cycle. Hormonal assays show a surge in luteinizing hormone (LH).

26 (i) What is the primary physiological event triggered by the mid-cycle LH surge?

A. Menstruation
B. Ovulation
C. Follicle formation
D. Endometrial shedding

26 (ii) Which hormone is primarily responsible for maintaining the corpus luteum after ovulation?

A. Follicle-stimulating hormone (FSH)
B. Luteinizing hormone (LH)
C. Human chorionic gonadotropin (HCG)
D. Progesterone

27 A patient suffers a complete transection of the spinal cord at the mid-thoracic level following a traumatic injury. Immediately after injury, the patient exhibits flaccid paralysis and loss of all reflexes below the level of the lesion.

27 (i) After spinal cord transaction, reflex movement that appears quite early is-

A. Flexor reflex
B. Mass reflex
C. Deep reflexes
D. Coitus reflex

27 (ii) As the stage of spinal shock passes off, functional activity first appears in-

A. Tone of blood vessels
B. Sphincter vesicae
C. Detrusor muscle of urinary bladder
D. Muscle tone

Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 06/Oct/2025

Time: Three Hours **Max. Marks: 100**

BIOCHEMISTRY – PAPER – I (RS-7)
Q.P. CODE: 5505
(QP Contains Four Pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAY **1 x 10 = 10 Marks**

1. What are the components of a lipid profile? Mention their normal reference range. Describe the metabolism of Lipoproteins in detail

REASONING QUESTIONS (Short Answer) **5 x 3 = 15 Marks**

2. a) **Acidosis is associated with hyperkalemia. Give reason**
   b) **Alkalosis is associated with hypokalemia. Give reason**
3. a) G6PD protects against malaria, justify
   b) Alcoholics are prone to Hypoglycemia, justify
4. a) Iron is one-way element substantiate.
   b) Wilson's disease is associated with bronze diabetes, substantiate
5. a) Benedict's test is semiquantitative. Justify
   b) Cellulose is not digested by humans. Give reasons
6. a) Vitamin B12 deficiency results in a Folate trap. Why?
   b) Vitamin K injection is given to all newborns. Why?

SHORT NOTES **4 x 5 = 20 Marks**

7. Describe the regulation of blood glucose. Mention the normal level of haemoglobin A1c in healthy individuals, pre-diabetics and Diabetics. Write its significance
8. A 6-year-old boy presents with spongy bleeding gums, swollen gingiva, and painful swelling of joints with pale conjunctivae. The pediatrician advised the mother to give plenty of citrus fruits to her child
   a) What is the probable diagnosis?
   b) Which biomolecule is deficient in this condition?
   c) What are the functions of this biomolecule?
9. A 48-year-old man suddenly develops excruciating pain and is rushed to the hospital. ECG reveals massive myocardial infarction.
   a) List all cardiac enzymes used for the diagnosis of myocardial infarction and their pattern of elevation.
   b) Which is the most specific biomarker for Myocardial Infarction?
   c) Which is the most commonly used thrombolytic agent for myocardial infarction?
10. Describe the composition, functions, and applied aspects of phospholipids

SHORT NOTES **7 x 5 = 35 Marks**

11. Describe the Chemiosmotic theory of Oxidative phosphorylation. Add a note on its inhibitors
12. Describe any five different transport mechanisms with examples.
13. Classify enzyme inhibition. Describe competitive enzyme inhibition with suitable examples
14. Define an Anion gap. Mention its normal reference range. Describe different types of anion gap with examples
15. What are dietary fibers? Give examples. Mention their RDA. List their functions
16. Mention the normal reference interval for serum calcium. What is the RDA for calcium?

Describe the regulation of blood calcium

17. Enumerate and describe the professional qualities of the roles of a Physician

MULTIPLE CHOICE QUESTIONS (All scenario based) **20 x 1 = 20 Marks**

18 Laboratory investigation of a 52-year-old man reveals his random blood glucose 100 mg/dl and urine glucose 1.5%

18 (i) What could be the cause of the above lab report?

M. Diabetes mellitus
N. Fructosuria
O. Pentosuria
P. Renal glycosuria

18 (ii) Renal threshold for glucose is

A. 180 mg/dl
B. 170 mg/dl
C. 160 mg/dl
D. 150 mg/dl

19 A 12-year-old child presents to a Pediatrician with complaints of thick mucus secretions, repeated lung infections, fatty stools, and decreased weight for his age. The pediatrician suspects cystic fibrosis.

19 (i) Choose an appropriate laboratory test that is impaired in Cystic Fibrosis

A. Increased chloride in sweat
B. Decreased chloride in sweat
C. Increased chloride in blood
D. Decreased chloride in blood

19 (ii) Cystic fibrosis occurs as a result of a mutation in the following ABC family of transporter gene

A. MRP 2
B. ABC B 4
C. ATP 7B
D. CFTR

20 Diagnosis of congestive cardiac failure was made in a 65-year-old man. He was prescribed digoxin.

20 (i) Identify the nature of this drug

A. Amino sugar
B. Glycoside
C. Glycoprotein
D. Glycolipid

20 (ii) Digoxin is formed by condensation of alcohol with the OH group of this carbohydrate

A. Glucose
B. Galactose
C. Fructose
D. Mannose

21 A 10-year-old child presents to a Pediatrician with yellowish discoloration of teeth. The pediatrician suspects fluorosis.

21 (i) Dental fluorosis results when the concentration of fluoride in water is more than

A. 5 PPM
B. 10 PPM
C. 15 PPM
D. 20 PPM

21 (ii) The Pediatrician asks the parents to check the fluoride level in the water. What is the safe limit of fluoride in water to prevent fluorosis?

A. Less than 1 PPM
B. Less than 5 PPM
C. Less than 2 PPM
D. Less than 3 PPM

22 A 52-year-old known diabetic gets his electrolytes checked in a lab.

22 (i) Identify the electrolyte imbalance due to hyperglycemia

A. Dilutional hypernatremia
B. Dilutional hyponatremia
C. Dilutional hypokalemia
D. Dilutional hyperkalemia

22 (ii) What is the probable disturbance in fluid volume in this patient?

A. Hypertonic expansion
B. Hypotonic expansion
C. Hypertonic contraction
D. Hypotonic contraction

23 A man doing a moderate amount of work and weighing 55kg approaches you to know his daily energy requirement.

23 (i) Choose the correct calorie requirement

A. 2050kcal/day
B. 3050kcal/day
C. 1050kcal/day
D. 550kcal/day

23 (ii) What is the percentage of extra calories that has to be considered towards SDA if the person is consuming mixed diet

A. 5%
B. 10%
C. 15%
D. 20%

24 A chronic alcoholic is brought to the hospital with impaired speech.

24 (i) What could be the amount of alcohol consumed by this person?

A. <50 ml
B. 50-150 ml
C. 150-300ml
D. 300-400ml

24 (ii) Alcohol is metabolized by all of the following enzymes **EXCEPT**

A. Alcohol reductase
B. Alcohol dehydrogenase
C. Aldehyde dehydrogenase
D. Microsomal ethanol oxidizing system

25 A 22-year-old female is diagnosed with Pulmonary Tuberculosis and is prescribed anti-tubercular treatment, and INH is one of its components.

25 (i) Identify the drug-induced vitamin deficiency

A. Folic acid deficiency
B. Vitamin B 12 deficiency
C. Pyridoxine deficiency
D. Niacin deficiency

25 (ii) Which is the active form of this vitamin?

A. TPP
B. FAD
C. NAD
D. PLP

26 A 10-year-old boy is diagnosed with Osteogenesis imperfecta.

26 (i) Identify the biochemical defect in this condition where glycine in collagen is replaced by

A. Glycine
B. Cysteine
C. Lysine
D. Proline

26 (ii) Collagen has this characteristic structure. Choose the appropriate one:

A. Triple helical
B. Quarter staggered
C. Triple helical & quarter staggered
D. Helical & quarter staggered

27 Autopsy of a 2-year-old child reveals accumulation of glycogen in lysosomes of hepatocytes, heart and muscle

27 (i) Identify the inborn error of metabolism

A. Von Gierke's disease
B. Pompe's disease
C. Her's disease
D. McArdle's disease

27 (ii) Deficiency of which enzyme results in the disorder mentioned above

A. Glucose 6 phosphatase
B. Branching enzyme
C. Debranching enzyme
D. Lysosomal maltase

Rajiv Gandhi University of Health Sciences, Karnataka

MBBS Phase – I (CBME) Degree Examination - 08/Oct/2025

Time: Three Hours **Max. Marks: 100**

BIOCHEMISTRY – PAPER – II (RS-7)
Q.P. CODE: 5506
(QP Contains Four Pages)

Your answers should be specific to the questions asked
Draw neat, labeled diagrams wherever necessary

LONG ESSAY **1 x 10 = 10 Marks**

1. Describe the metabolism of Tryptophan. Enumerate the specialized compounds formed from tryptophan and write their biomedical importance

   Or

   Mention the symptoms of Phenylketonuria. Discuss the tests used for diagnosis of Phenylketonuria. Enumerate the specialized compounds formed from tyrosine and write their biomedical importance

REASONING QUESTIONS (Short Answer) **5 x 3 = 15 Marks**

2. Why uric acid tends to precipitate during the night time in peripheral joints and in alcohol consumption.
3. Why number of tRNA required is less than the number of codons. Why Degeneracy of genetic code reduces the effect of mutations.
4. Why RTPCR is better than Conventional PCR?
5. Why presence of HbF in higher concentration is beneficial to the patients with Sickle cell disease and beta thalassemia
6. Why are globulins increased in chronic liver disease but albumin is decreased? Why Edema is seen in Liver disease?

SHORT NOTES **4 x 5 = 20 Marks**

7. **A 56 year old woman presents with swelling and pain in the first toe of the right foot. Her uric acid level was 8 mg/dL. Write the degradation of purine nucleotides.**
8. A 40-year-old woman presents with a breast lump. Biopsy shows overexpression of HER2/neu oncogene**.**
   a) What is this condition?
   b) Explain the role of proto-oncogenes and oncogenes in cancer development with suitable examples
9. Explain the assessment of renal tubular function.
10. Explain the formation and degradation of Bilirubin

SHORT NOTES **7 x 5 = 35 Marks**

11. What are the different structural levels of proteins? Explain any two in detail
12. Differentiate between active and passive immunity.
13. Describe the structure of tRNA with functions.
14. Explain post translational modifications.
15. What are free radicals? Give examples. Explain the cellular damage caused by free radicals.
16. Differentiate between Phase I and Phase II reactions in detoxification.
17. Why is lifelong learning an essential commitment for a doctor, and how does it benefit both clinicians and society?

Rajiv Gandhi University of Health Sciences, Karnataka

MULTIPLE CHOICE QUESTIONS (All scenario based) **20 x 1 = 20 Marks**

18 A 25-year-old man develops shortness of breath. Genetic testing reveals α1-antitrypsin deficiency.

18 (i) This deficiency predisposes to
- A. Emphysema
- B. Myocardial infarction
- C. Kwashiorkor
- D. Osteoporosis

18 (ii) α1-antitrypsin normally inhibits
- A. Trypsin
- B. Elastase
- C. Pepsin
- D. Chymotrypsin

19 A 2-year-old child presents with developmental delay, seizures, and a "mousy odor" of urine. Laboratory shows elevated phenylalanine.

19 (i) The deficient enzyme is
- A. Tyrosinase
- B. Phenylalanine hydroxylase
- C. Homogentisate oxidase
- D. Tyrosine aminotransferase

19 (ii) Which cofactor is required for this enzyme?
- A. Tetrahydrobiopterin
- B. Folic Acid
- C. TPP
- D. PLP

20 A 2-year-old child presents with recurrent severe infections. Laboratory investigations shows lymphopenia and ↑ dATP levels.

20 (i) The deficient enzyme is:
- A. Ribonucleotide reductase
- B. Adenosine deaminase (ADA)
- C. HGPRT
- D. Xanthine oxidase

20 (ii) This condition is usually associated with
- A. Increased uric acid levels
- B. Decreased uric acid levels
- C. Increased Urea levels
- D. Increased Ammonia Levels

21 A 3-year-old child presents with immunodeficiency and increased sensitivity to UV radiation associated with defective DNA repair.

21 (i) The most likely condition is
- A. Ataxia Talangiectasia
- B. Fanconi Anemia
- C. Xeroderma Pigmentosum
- D. Bloom's Syndrome

21 (ii) Which clinical feature is commonly associated with this defective DNA repair?
- A. Hyperuricemia
- B. Hypoglycemia
- C. Liver cirrhosis
- D. Increased cancer susceptibility

22 A researcher measures mRNA levels using RT-PCR.

22 (i) What does RT stand for
- A. Rapid transcriptase
- B. Reverse transcriptase
- C. RNA tracking
- D. Ribosome targeting

22 (ii) Purpose of RT-PCR is to
- A. Detect DNA by converting it to RNA and amplifying
- B. Detect RNA by converting it to cDNA and amplifying
- C. Detect Viral proteins
- D. Detect lipids

23 A 45-year-old man presents with liver enlargement. Blood tests show elevated AFP levels

23 (i) AFP is a tumor marker for which of the following tumor?
- A. Breast cancer
- B. Colon cancer
- C. Lung cancer
- D. Hepatocellular carcinoma

23 (ii) AFP is also elevated in
- A. Prostate cancer
- B. Neural tube defect
- C. Congenital heart disease
- D. Renal failure

24 A 25-year-old woman presents with abdominal pain, vomiting and neuropathy. Urine appears dark red on standing.

24 (i) Which enzyme deficiency is responsible for Acute Intermittent Porphyria?
- A. Uroporphyrinogen decarboxylase
- B. Ferrochelatase
- C. Porphobilinogen deaminase
- D. ALA synthase

24 (ii) Which substance/s is/are elevated in Acute Intermittent Porphyria?
- A. Heme
- B. Bilirubin
- C. Porphobilinogen and ALA
- D. Uroporphyrin

25 A patient presents with pallor and jaundice. Laboratory investigations show elevated indirect bilirubin and LDH, with low haptoglobin.

25 (i) What type of bilirubin predominates in hemolysis?

- A. Conjugated
- B. Unconjugated (indirect)
- C. Direct
- D. Delta bilirubin

25 (ii) What is the observation in Vandenbergh reaction?

- A. Indirect Positive
- B. Direct positive
- C. Biphasic
- D. Negative

26 55-year-old Diabetic patient has persistent microalbuminuria. eGFR is 82mL/min/1.73 m^2

26 (i) Which is the most appropriate interpretation?

A. Early Diabetic Nephropathy
B. Advanced CKD
C. Renal Tubular acidosis
D. Acute Glomerulonephritis

26 (ii) Microalbuminuria refers to amount of excretion of albumin in urine

A. 300-800 mg/day
B. 30-300 mg/day
C. 100-300 mg/day
D. 500-1000 mg/day

27 A patient potassium level is 6.8 mg/dL; however values are not correlating clinically.

27 (i) What is the most likely cause?

A. Sodium Citrate contamination
B. Delayed sample transport
C. Due to invitro RBC rupture
D. High chloride interference

27 (ii) All of the following parameters are affected by hemolysis **EXCEPT**

A. LDH
B. Potassium
C. Magnesium
D. Sodium

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